

Appl. No. 09/649,528

Amdt. Dated 21 November 2005

Reply to Office action of 7 November 2005

AMENDMENTS TO THE CLAIMS

Please substitute the following claims for the respective claims previously existing in this application.

1-21. (Cancelled).

22. (New) A hydrogen generator comprising:

a fuel processor being collectively defined by,

an inlet channel for transporting a liquid fuel;

a vaporization zone receiving liquid fuel from the inlet channel;

at least one vapor channel for transporting vaporized liquid fuel from the vaporization zone to a reaction zone; the reaction zone including a reforming catalyst for reforming the vaporized liquid fuel into a hydrogen enriched gas;

an outlet channel for transporting the hydrogen enriched gas out of the reaction zone; and

a chemical heater further receiving liquid fuel from the inlet channel; the chemical heater being thermally coupled to the reaction zone and the vaporization zone using thermally conductive channels or thermally conductive vias; the chemical heater including a catalyst and an air inlet for receiving oxygen for the oxidation of the fuel to produce heat;

wherein the inlet channel, the vaporization zone, the at least one vapor channel, the reaction zone, the outlet channel and the chemical heater are formed within a plurality of individual ceramic layers that are assembled and subsequently sintered together to form a single, three-dimensional, integral, monolithic, ceramic carrier structure.

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23. (New) The hydrogen generator as claimed in claim 22, wherein at least one of the vaporization zone and the reaction zone include a plurality of parallel channels or at least one serpentine channel.

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24. (New) A hydrogen generator comprising:

a fuel processor being collectively defined by,

an inlet channel for transporting a liquid fuel;

a vaporization zone receiving liquid fuel from the inlet channel;

at least one vapor channel for transporting vaporized liquid fuel from the vaporization zone to a reaction zone; the reaction zone including a reforming catalyst for reforming the vaporized liquid fuel into a hydrogen enriched gas;

an outlet channel for transporting the hydrogen enriched gas out of the reaction zone; and

a heater thermally coupled to the reaction zone and the vaporization zone using thermally conductive channels or thermally conductive vias; the heater comprising an electrically driven resistive heater or a chemical heater further receiving liquid fuel from the inlet channel; the chemical heater including a catalyst and an air inlet for receiving oxygen for the oxidation of the liquid fuel to produce heat;

wherein at least one of the vaporization zone and the reaction zone comprises a plurality of parallel channels or at least one serpentine channel; and

the inlet channel, the vaporization zone, the at least one vapor channel, the reaction zone, the outlet channel and the heater are formed within a plurality of individual ceramic layers that are assembled and subsequently sintered together to form a single, three-dimensional, integral, monolithic, ceramic carrier structure.

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25. (New) A hydrogen generator comprising:

a fuel processor being collectively defined by,

an inlet channel for transporting a liquid fuel;

a vaporization zone receiving liquid fuel from the inlet channel;

at least one vapor channel for transporting vaporized liquid fuel from the vaporization zone to a reaction zone; the reaction zone including a reforming catalyst for reforming the vaporized liquid fuel into a hydrogen enriched gas;

an outlet channel for transporting the hydrogen enriched gas out of the reaction zone; and

a heater thermally coupled to the reaction zone and the vaporization zone using thermally conductive structures; the heater comprising an electrically driven resistive heater or a chemical heater further receiving liquid fuel from the inlet channel; the chemical heater including a catalyst and an air inlet for receiving oxygen for the oxidation of the liquid fuel to produce heat;

wherein at least one of the vaporization zone and the reaction zone comprises a plurality of parallel channels or at least one serpentine channel; and

the inlet channel, the vaporization zone, the at least one vapor channel, the reaction zone, the outlet channel and the heater are formed within a plurality of individual ceramic layers that are assembled and subsequently sintered together to form a single, three-dimensional, integral, monolithic, ceramic carrier structure.